



Corres. and Mail
BOX AF

AF 2700

#12
2-12-04

RESPONSE UNDER 37 C.F.R. § 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2600

RECEIVED

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named
Inventor : Tao Zhang et al.

FEB 05 2004

Appln. No.: 09/896,895

Technology Center 2600

Filed : June 29, 2001

Group Art Unit: 2651

For : REAL-TIME AUTOMATIC LOOP-
SHAPING FOR A DISC DRIVE
SERVO CONTROL SYSTEM

Examiner: Andrew L.
Snizek

Docket No.: S01.12-0787

RESPONSE AFTER FINAL

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I HEREBY CERTIFY THAT THIS PAPER IS BEING
SENT BY U.S. MAIL, FIRST CLASS, TO THE
COMMISSIONER FOR PATENTS, P.O. BOX 1450,
ALEXANDRIA, VA 22313-1450, THIS

28th DAY OF JANUARY, 2004

A. Rego

PATENT ATTORNEY

Sir:

This is in response to the Office Action dated December 23, 2003 in which claims 1-4, 9, 11-12, 15-20 and 25 were rejected and claims 5-8, 10, 13-14, 21-24 and 26 were objected to. Applicants respectfully request reconsideration and allowance of all pending claims.

On page two of the Office Action, the Examiner rejected claims 1-3, 9, 11-12, 15-19 and 25 under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted Prior Art (figure 2) in view of Ottesen et al., U.S. Patent No. 6,417,982. Further, the Examiner rejected claims 4 and 20 under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted Prior Art (figure 2) and Ottesen et al. as applied to claims 1-3, 9, 11-12, 15-19 and 25, and further in view of Sidman et al., U.S. Patent No. 5,155,422.

In response to the Applicants' arguments that the elements of Ottesen do not operate in "real-time" to reduce vibrations in

signals that drive the accuator, the Examiner states that in both the Applicants' invention and that taught by Ottesen, the circuits adaptively adjust parameters at the present time instead of during a manufacturing stage. By making this statement, the Examiner appears to suggest that any parameter adjustment that does not occur during a manufacturing stage occurs at the present time (or real-time). However, this is clearly in contrast with the definition of real-time (the actual time in which a physical process under computer study or control occurs) that the Examiner has provided in the Office Action. The definition provided by the Examiner further distinguishes the claimed invention from the cited art.

The Examiner also states that the arrangement of Ottesen satisfies the above definition of real-time since adjustments are made during actual time and not some fictitious time. It is respectfully pointed out that, in the previous arguments filed on October 14, 2003, Applicants have not suggested that the arrangement of Ottesen carries out parameter adjustments in fictitious or imaginary time. However, Applicants maintain that evidence showing that vibration reduction elements 120, 122 and 128 do not operate in real-time to carry out vibration filtering can be found in FIG. 6A of Ottesen. The flow chart of FIG. 6A requires deactivation of all notch filters (step 202) and a reduction of the spindle velocity (step 210) for elements 120, 122 and 128 to carry out necessary computations for vibration detection and reduction. New coefficients, produced as a result of these computations, are incorporated in the notch filters before they are subsequently re-activated for normal operation. Clearly, the deactivation of all vibration filtering elements (notch filters) and the reduction of the spindle velocity will not allow for the vibration filtering process (the physical process under computer control) to be carried out in real-time (the actual time in which a physical process under computer study or control

occurs). In contrast, claim 1 recites "a vibration damping circuit coupled to receive a driving energy signal; and a real-time adaptive loop shaping circuit configured to detect vibration energy in a position error signal in real-time, and to responsively adjust, in real-time, at least one parameter of a transfer function of the vibration damping circuit to reduce vibrations at different frequencies in the driving energy signal received by the vibration damping circuit." Thus, Applicants respectfully assert that independent claim 1 is patentably distinct and non-obvious over the prior art.

Independent claim 11 has elements similar to that of independent claim 1. Thus, for the same reasons as independent claim 1, Applicants submit that independent claim 11 is allowable as well. Similarly, independent claim 16, and the claims that depend from independent claims 1, 11 or 16, are believed to be allowable for the above reasons, and for reasons included in the previous Amendment filed on October 14, 2003.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: Alan G. Rego
Alan G. Rego, Reg. No. 45,956
Suite 1600 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 339-3312

AGR:tkj